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(54) Preserving a carcass of meat

(57) A method of treating a carcass of meat for reducing bacterial contamination thereof comprises the step of applying steam to the surface of the carcass. The method is particularly applicable to poultry carcasses to reduce contamination by salmonella. Preferably, the steam is sprayed onto the internal and external surfaces of the carcass for a period not exceeding 15 seconds and this takes place after the carcass has been eviscerated but before chilling. The steam raises the temperature of the skin of the carcass to at least 68.4°C at which temperature all salmonella bacteria are destroyed.

A method of treating a carcass of meat

The invention relates to a method of treating a carcass of meat, particularly but not exclusively a poultry carcass, for reducing bacterial contamination thereof.

The contamination of poultry carcasses with various strains of salmonella has caused and continues to cause considerable concern, both in the poultry industry and to the public. Various studies and surveys have shown that there is a high rate of cross-contamination between carcasses within the processing plant whereby, if one bird is infected, apparatus used to treat that bird can transfer the contamination to other birds treated by the same apparatus. Sterilisation of each piece of equipment between treatment of successive birds is prohibitively expensive.

The most common parts of a poultry-processing plant where cross-contamination occurs are the scald tank, situated immediately before the defeathering apparatus, and the evisceration apparatus. In the scald tank, successive carcasses are passed through a bath of hot water or water/steam mixture to facilitate the removal of the feathers. The salmonella bacteria can be washed

from one bird to another in this bath. The evisceration apparatus enters successive carcasses to remove the internal organs of the bird. Entry of the apparatus into a contaminated bird followed by entry into successive birds can cause cross-contamination.

It is generally accepted that a very high percentage of salmonella contamination is surface contamination. The flesh beneath the skin is very rarely infected, although contamination of the surface of the internal cavity does occur. Health authorities therefore insist that all poultry-processing plants utilise an inside/outside washer which washes the carcass in water. The water is usually cold since the carcass will normally pass directly to a chiller prior to packaging and/or distribution. However, the incidence of salmonella in chicken carcasses at this stage is still relatively high.

It is an object of the invention to provide a method of treating a carcass of meat which will reduce bacterial contamination.

According to the invention there is provided a method of treating a carcass of meat for reducing bacterial contamination thereof, the method comprising the step of applying steam to the surface of the carcass.

Preferably, the steam is sprayed onto the surface of the carcass, which is preferably a poultry carcass.

Preferably, the steam is applied for a period not exceeding 15 seconds, more preferably not exceeding 10 seconds and advantageously not exceeding 5 seconds.

The steam is preferably applied after the carcass has been eviscerated and the steam is then preferably also applied to the surface of the internal cavity of the carcass. Most preferably, the steam is applied immediately before chilling prior to distribution for consumption.

The invention also provides apparatus for carrying out a method as described above and also a carcass treated according to the method described above.

Salmonella bacteria are instantly destroyed at temperatures over 68.4°C. The application of steam to the surface of the carcass raises the surface temperature to at least 68.4°C and thereby destroys any salmonella bacteria which are present on the surface. This type of steam treatment has previously not been considered for such an application since it is generally understood that the application of steam to a poultry carcass ruins the appearance of the skin. In fact, tests

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have shown that this is only true if the skin is handled after such an application, eg by defeathering apparatus, and does not substantially affect the appearance of the skin if the carcass is chilled immediately after the application of the steam. Also, there is no discernable temperature rise of the flesh beneath the skin when the application of the steam to the surface is restricted to a period not exceeding 15 seconds. Thus no effective cooking of the flesh takes place as a result of the application of the steam, and virtually no additional chilling is required.

Tests of the method according to the invention have shown that startling reductions of the incidence of salmonella can be achieved by spraying the carcasses passing through a processing plant with steam.

The invention will now be described by way of example only with reference to the accompanying drawing, wherein:

Figure 1 is a schematic diagram showing a poultry-processing plant operating a method according to the invention.

In a method according to the invention, a carcass which has passed through the stages of slaughtering, scalding, defeathering and evisceration is then passed to a steam

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spray area as shown in Figure 1. There, steam is applied to the surface of the carcass for approximately 5 seconds and is applied via steam jets connected to a steam source (not shown). The jets are so arranged that the surface of the internal cavity of the carcass is also sprayed with steam. The carcass is subsequently passed to chilling apparatus to chill the carcass before packaging and/or distribution.

Tests have shown that the amount of surface contamination on an infected carcass can be reduced by as much as 94-97% by spraying with steam, depending upon the length of time of application. The temperature of the carcass does not rise to any significant extent and thus the performance of the chilling apparatus need be no better than has previously been used in known processes. The appearance of the skin of the carcass is not substantially affected since no handling takes place between the application of the steam and the chilling step.

The invention is not, however, limited to the method described above. If required, the carcasses could be passed through a steam chamber rather than use specifically arranged nozzles to produce jets of steam. The steam could, if necessary, be superheated to ~~X~~ increase the temperature at which it contacts the skin

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of the carcass. This may enable the duration of the application to be reduced: it is undesirable that any cooking of the flesh should take place.

It is also possible to carry out the step of spraying ~~the carcass with steam at any convenient stage in the~~ production process. Indeed, such a step may be carried out more than once during the process. However, for poultry production, steam spraying before defeathering may result in a deterioration of the appearance of the skin of the carcass, and before evisceration may result in further contamination by means of the eviscerating apparatus.

It is envisaged that the steam spraying of carcasses of meat other than poultry to reduce bacterial contamination may be appropriate.

C L A I M S

1. A method of treating a carcass of meat for reducing bacterial contamination thereof, the method comprising the step of applying steam to the surface of the carcass.
2. A method as claimed in Claim 1, wherein the steam is sprayed onto the surface of the carcass.
3. A method as claimed in Claim 1 or 2, wherein the carcass is a poultry carcass.
4. A method as claimed in Claim 3, wherein the steam is applied for a period not exceeding 15 seconds.
5. A method as claimed in Claim 4, wherein the steam is applied for a period not exceeding 10 seconds.
6. A method as claimed in Claim 5, wherein the steam is applied for a period not exceeding 5 seconds.
7. A method as claimed in any one of Claims 3 to 6, wherein the steam is applied after the carcass has been eviscerated.
8. A method as claimed in Claim 7, wherein steam is applied to the surface of the internal cavity of the



carcase.

9. A method as claimed in any one of the preceding claims, wherein the steam is applied immediately before chilling.

10. A method substantially as hereinbefore described with reference to the accompanying drawing.

11. Apparatus for carrying out a method according to any one of the preceding claims.

12. A carcase treated by means of a method according to any one of Claims 1 to 10.

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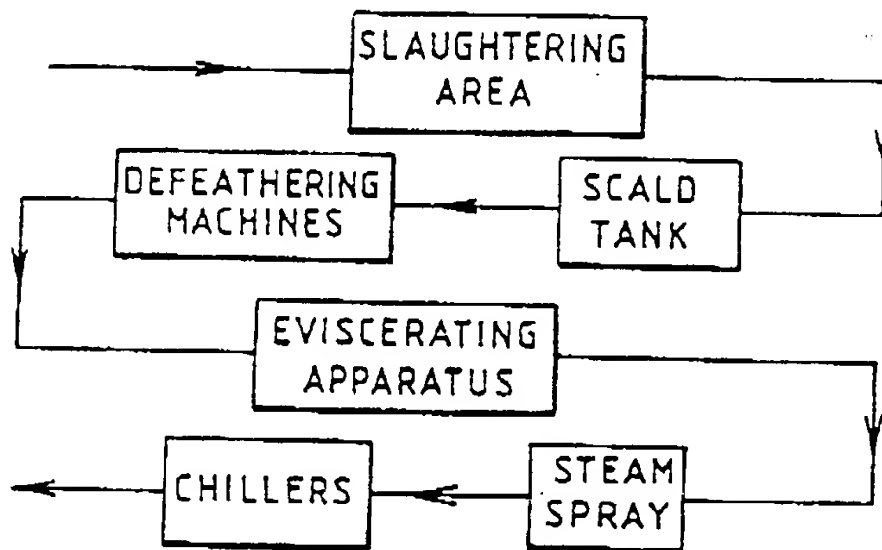


FIG.1.